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THE CLINICAL FEATURES

OF

PRIMARY TUBERCULOSIS OF THE GENITO-
URINARY ORGANS.

BY

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573 -

ON SOME OF THE CLINICAL FEATURES OF PRIMARY TUBERCULOSIS OF THE GENITO- URINARY ORGANS.¹

BY FRANCIS S. WATSON, M.D., BOSTON.

THIS communication does not aim at treating the subject at all completely, but is intended merely to call attention to some of the more suggestive symptoms of this disease as it occurs in the urinary organs, and especially as it affects the bladder and kidneys, and is prompted by the belief that the disease is frequently overlooked. I have recently asked six or eight general practitioners of fifteen or twenty years' standing, with opportunities for wide observation, how often they had seen cases of primary tuberculosis of the urinary organs. The answers varied from "four or five times," to "practically never." In some cases I have been asked to see, in consultation, patients with "obstinate cystitis," which have proved to be examples of tuberculosis, generally renal, which had not been suspected.

Since reporting a case of tuberculosis of the kidneys and bladder, and showing the specimens obtained at the autopsy, at a meeting of this Society six years ago, I have had twenty others, in which the nature of the disease was demonstrated by autopsies, or by the discovery during life of the characteristic bacilli, and four or five more which although such proof was lacking, I am convinced were also examples of tuberculosis. In all but two of these cases the disease, so

¹ Read before the Suffolk District Medical Society, April 28, 1894.

far as could be determined, originated in some part of the genito-urinary tract, as follows: in seven cases the disease originated in the epididymis; in four in the prostate or seminal vesicles; in three in the kidney; in the remainder the origin was undetermined. In two cases the autopsies showed apparently that the disease was confined to the genito-urinary tract. In two it was doubtful whether the disease had not originated in other organs, with this exception the evidence was wholly in favor of its being primary in the genito-urinary organs. One case of tuberculous epididymitis, and one of prostatitis started in gonorrheal inflammation.

Fifteen of the cases were males; six were females. The oldest patient was a man fifty years of age at the time of his death, in whom symptoms referable to the prostate and bladder, were first noticed two years' before. The youngest patient was a girl six years of age, in whom the disease was primary in the kidney, probably, the first symptoms (irritable bladder and pyuria) being noted two years ago; this patient has been subjected to a right-sided nephrotomy, and is still alive.

The average duration of life after the appearance of the first symptoms which indicated that the kidneys or bladder were involved, was a little more than three years. There are two patients, one a man and one a woman, in whom the disease seems to have been arrested, one having been almost free from subjective symptoms for two years, and the other for nearly four years. The urine of both, however, still contained a few blood-globules, when last examined, one year and eighteen months ago respectively, and from time to time a small quantity of pus. Tubercle bacilli were found in the urine of both patients; no examinations have been made for them recently. Both patients

appear to be in excellent health, and are free from all subjective symptoms.

It is not probable that this series of cases represents more than a small proportion of those occurring in this neighborhood.

Perhaps the reason, that more than any other leads genito-urinary tuberculosis to be overlooked, is the readiness to rest content with a diagnosis of "idiopathic cystitis" in cases in which pyuria and irritable bladder are the conspicuous symptoms, and in which a few microscopic examinations of the urinary sediment fail to show casts, renal epithelium, or crystals, the latter fact being often assumed, under these circumstances, to free the kidneys from suspicion of being involved. "Idiopathic cystitis" in the sense of a spontaneously occurring inflammation of the mucous membrane of the bladder — an inflammation without a well-defined cause, that is to say — I do not believe exists. If inquiry is pushed far enough, some conditions, of which such as the following are the most familiar examples, will be found to have originated the trouble: gonorrhea; stone; lithiasis; stricture; prostatic hypertrophy, and its consequences; the use of instruments; acute overdistention of the bladder, such as occurs sometimes in childbirth, or by voluntary effort, as with the insane; profound narcosis from opium or alcohol; the injection of certain irritating drugs, for example, cantharides; in connection with certain diseases of the spinal cord, etc.

If, in the absence of these or other well-defined causes, a patient has symptoms of cystitis, it is strongly suggestive of tuberculous disease in the genito-urinary tract, probably located in the kidneys, the prostate, the seminal vesicles, or possibly in the bladder itself; but the latter is thought to be rarely the starting-point of the disease.

It should be borne in mind that *bladder irritability* is sometimes the most conspicuous sign of certain conditions in the kidney, the bladder itself being at the time free from disease. This is notably true of calculous pyelitis, of malignant and of tuberculous disease of the kidney. It is also seen in connection with simple, and more markedly with tuberculous, inflammation of the seminal vesicles and the prostate.

With regard to the method of entrance of tubercle bacilli and their lodgement in the genito-urinary tract, I will not speak, but merely note that the disease may take any of its organs as a starting-point, and that in the majority of cases in the male it begins in the epididymis, testis or prostate, and ascends more or less rapidly to the other organs. It rarely begins in the bladder; more frequently than in the latter in the kidneys, and descends.

The disease may remain localized in the epididymis or testis for a long time (several years), but it is more usual for the extension to take place more rapidly; and in some cases its progress is very rapid.

To return to symptoms. The presence of a *hard lump* in one *epididymis*, especially if the patient has never had gonorrhea or received an injury, is suggestive of its being of tuberculous nature,² this suspicion is heightened if the urinary sediment contains, pretty constantly, blood-globules, and is further increased if there is irritability of the bladder.

An outline of the following case will serve as an example. Four years ago a young man consulted me for a slightly increased frequency of urination and a "teasing" desire to urinate often. This had begun two months before, and had very gradually in-

² As has been noted by Guyon and others, tuberculous disease seems not infrequently to grow out of an attack of gonorrhea. An induration in the epididymis is, however, less significant after a clap, than where there has been none.

creased. The physical examination showed nothing except a hard lump in the right epididymis — this the patient had never noticed. The urine contained a very faint trace of albumin constantly, and there were always a few blood-globules in the sediment. I think the patient's statement that he had never had any venereal disease or received any injury to the parts, was true. He subsequently developed tuberculosis of the prostate, bladder and kidneys, and died.

Bryson has called attention to the existence of small, shot-like bodies to be felt in the hilus of the testis as the first evidence of tuberculous deposit in these organs. They pass unnoticed by the patient, and often by the physician.

Induration of the *seminal vesicles* and an uneven, furrowed prostate, or small areas of softening and indistinct fluctuation in the prostate, can often be felt by rectal examination when the disease occupies these organs. Cabot calls attention to the presence of hard, pea-like bodies to be felt in the prostate by rectal examination, in some cases, as being suggestive of tuberculosis in that organ.

These features are dwelt on in order to emphasize the importance of systematic examination of the epididymes, testes, seminal vesicles and prostate in every case.

Blood in the urine is often the first sign of the disease. It is generally seen in the form of small clots. It is most noticeable in the early stages of the disease, as a rule. It is rarely profuse, as it generally is with tumors of the bladder and in some cases of malignant disease of the kidney. It is not increased by exercise, as it is apt to be in cases of stone, nor by instrumental examination of the bladder, as it often is in cases of bladder tumors. I have never seen blood-globules absent from the urine on microscopic

examination at any time. In one of my cases blood never appeared except microscopically. Exceptionally there are profuse hemorrhages; this I saw in one case. Tuffier has reported a case in which there were attacks closely resembling paroxysmal hemoglobi-nuria.

Pus in the urine is more rarely the first symptom, but it is often coincident with blood when the latter has become sufficient in quantity to be noticed. When it arises from the bladder, it is continuously present; when from the kidney, it is often variable in quantity; and if only one kidney be involved and its ureter becomes plugged, pus may disappear for a time, the freeing of the ureter being followed by its reappearance in the urine in large quantity. Occasionally small masses of caseous matter are seen in the urine; and it is to the lodgement of these or of a blood-clot in the ureter that its temporary plugging is due. As a rule, these plugs are dissolved or pressed onward into the bladder too soon to allow of the formation of a very marked pyonephrosis, but sometimes they are too large and firm to be so readily pushed down, and an extensive pyonephrosis is produced, advancing sometimes to the point of threatening rupture of the pelvis of the kidney. Such a threatening occurred in one of my cases on three separate occasions, producing the following phenomena: the sudden disappearance of pus from the urine, a diminution in the quantity of urine, pain in the left side, the appearance of a large tumor in the left loin, extending forward to the abdomen, and evidently connected with the kidney, and a marked rise of temperature. Twenty-four hours later there was a sudden reappearance of pus in great quantity in the urine, a disappearance of the tumor and of the pain in the side, and a dropping of the temperature. In the first flow of urine, follow-

ing the reappearance of pus, there were numerous cheesy masses, of various shapes and sizes, one or two being quite large enough to have blocked the ureter. Occasionally such stoppage of the ureters will produce attacks of *renal colic simulating* those produced by *renal calculus*.

There are two points in connection with the pyuria of renal and bladder tuberculosis that I do not remember to have seen noted by writers on the subject, which I have observed in several of my cases, namely, that *the pus has a peculiar dirty-gray color, and that these tuberculous urines even when loaded with pus, do not, in many cases, have the exceedingly foul smell that is often noticed in the urines of some cases of chronic cystitis in connection with prostatic hypertrophy, and more especially of malignant disease of the kidney and bladder.*

Unlike blood the pus generally increases in quantity as the disease progresses, although in some instances it undergoes marked temporary diminution.

Painful and frequent urination are also early symptoms. Very often the first thing that attracts the patient's notice is a slight increase in frequency of, and a teasing desire for, urination; this may precede the appearance of pus or blood in the urine by several weeks or months, and be the only symptom. There is nothing especially characteristic with regard to the pain except that when the bladder is involved, it is most severe when the bladder fills, instead of being so, as in cases of stone, as the bladder empties; and the occurrence of very marked remissions, when they take place, as they do in some cases without any apparent cause, is a very suggestive feature. These remissions of pain are usually associated with a diminution of pus in the urine. Pain is not so markedly increased by exercise as it is in stone.

Bladder irritability is often very marked when the disease is still confined to the kidney; and it is this, as I have said, which sometimes causes the mistakes in diagnosis, through considering the trouble to be an ordinary cystitis.

Before leaving the symptom of pain, let me say that as the disease advances it becomes almost intolerable; it is worse than that of stone because almost incessant. I think I have never seen greater suffering, except in cases of cancer of the bladder or prostate; and yet, even up to the last, there continue to be unexpected periods of relief in some cases.

Two strikingly characteristic features of renal and bladder tuberculosis are (1) the extraordinary remissions in the severity of many or all the symptoms, and (2) the entire failure of the ordinary medicinal remedies to relieve the bladder symptoms, and the positive aggravation of the latter by local treatment, such as bladder washes, deep urethral injections, or the passage of instruments. The remissions are very deceptive, and often raise false hopes.

There is one other thing that I have observed in this series of cases, and that is, the comparatively rare occurrence of chills and profuse sweats that are so frequently seen in connection with cases of suppurative nephritis, of the so-called surgical kidney. In concluding these notes on some of the especially suggestive symptoms of this disease, let me repeat what I said at first, that the appearance in the manner described of bladder irritability, of blood in the urine, and of pus, is, in the absence of any of the special causes mentioned, particularly if occurring in a male under fifty years of age, highly suggestive of renal or bladder tuberculosis. To establish the diagnosis, there remain the discovery of the tubercle bacilli, and the cystoscopic examination of the bladder.

SURGICAL TREATMENT.

Of this I shall only give a very brief outline. The outlook is not hopeful for surgical interference, but it can often avert immediate danger, and relieve pain sometimes. If I should judge from my own experience, I should say that local treatment of the bladder when it is the seat of the tuberculous process is for the most part unavailing. I have had no success with applications to the bladder, and have tried thoroughly emulsions of iodoform, solutions of nitrate of silver,³ boracic acid, permanganate of potash, and so on through the whole list. Dilatation of the female urethra sometimes gives short periods of relief, but often fails to do so. Deep urethral injections are, so far as I have seen, injurious. Long-continued drainage of the bladder through the perineum has failed to relieve, in my hands. In two cases in which suprapubic cystotomy was done for the relief of most distressing vesical tenesmus, the operations were partially successful, especially when supplemented by applications. Iodoform applications after curetting the ulcerated surfaces of the mucous membrane of the bladder, afforded very considerable relief in both cases. Guyon has reported two cases of what he considered to be primary tuberculosis of the bladder, which he treated by suprapubic cystotomy, and by burning the ulcerated surfaces with the actual cautery; one of these he reports as cured, the bacilli having disappeared from the urine, and the patient being free from all symptoms one year later. The second patient did well, but the bacilli did not disappear.

With regard to the prospect of success attending operations on the kidney, the statistics published by

³ The author has not used nitrate of silver in the manner recommended by Kelley of Baltimore.

Newman and others are of interest. Facklam⁴ reports as follows:

He collected 108 cases of tuberculosis of the kidney, in 20 of which nephrotomy and in the remainder nephrectomy was performed.

Two-thirds of the patients were women. The percentage of cases with reference to age is shown below:

1 to 10 years	. . . . .	7 per cent.
11 to 20 years	. . . . .	9.4 "
21 to 30 years	. . . . .	37.6 "
31 to 40 years	. . . . .	37.6 "
41 to 50 years	. . . . .	7 "
Over 50 years	. . . . .	1.2 "

In 38 cases out of 72 the diagnosis was correctly made before operation.

The following conclusions are drawn from a study of the operations and their results:

The mortality attending the operations in the 20 nephrotomies was about 60 per cent.

Of the eight patients who recovered, four only are claimed as cures; and of these but one resulted in a well established cure.

Of the patients who died within a short time after the operation, five had had the disease for several years previously; two of them developed acute miliary tuberculosis immediately after the operation; one died of uremia (the other kidney was seriously involved by the disease); one died of acute septicemia; and in the remainder the disease was far advanced, or had involved other organs beside the kidney.

From this evidence the author concludes: "Thus far the results of nephrotomies in cases of renal tuberculosis are not favorable."

In 16 additional cases in which nephrotomy had been performed without improving the patient's condi-

⁴ Arch. für klin. Chir., 1893, B. 45, H. iv.

tion, nephrectomy was done — resulting, in 10 of them, in very marked improvement.

Nephrectomy was performed in 88 cases, with a mortality of 28 per cent. In 13, the operation was performed through an abdominal incision, with four deaths (about 30 per cent. mortality). In 75, the operation was extraperitoneal, 21 deaths resulting (or about 28 per cent. mortality); but of these latter 16 can be said not to have died as a direct result of the operation, whereas the four deaths resulting from the abdominal operation were all due to shock, and followed immediately upon the operation.

Of the cases which recovered from the operation 62, or 70 per cent., are reported as wholly cured or greatly relieved, but of these only 14 had been under observation for over one year after the operation. Of these 14 cases, five are entirely cured, so far as can be seen; the rest are not wholly free from evidences of the disease.

As Vigneron⁵ has pointed out, the success of nephrotomy in these cases depends on the thoroughness with which the pus cavities are opened into each other and cleansed, and freely drained. It should be remembered that hemorrhage is very profuse in resections or curretting of the kidney substance, but it is usually readily controlled by firm packing. A summary of the article of Vigneron above referred to, relative to these operations on the kidney in cases of tuberculosis is here submitted.

Dr. Vigneron points out that surgical interference in cases of renal tuberculosis dates back only twenty-five years, and that the subject has been exhaustively treated only since 1890. He refers to the articles of Tuffier, Facklam and Heydenreich as the most recent

⁵ *Annales des Maladies des Organes Genito-Uriinaires*, September, 1894.

and important contributions to the subject; and he compares his own conclusions — arrived at independently — with those of the other surgeons just named, as follows:

NEPHROTOMY IN RENAL TUBERCULOSIS.

Facklam: 36 cases, general mortality 33.33%, operative mortality, 13.88%.

Vigneron: 54 cases, general mortality 38.18%, operative mortality, 12.72%.

Vigneron advises against early surgical interference in renal tuberculosis, following in this respect the teachings of Professor Guyon.

His conclusions in regard to nephrotomy are, that the operation affords relief in many cases, and that radical cure may follow its performance in some rare instances. In this connection, he cites the case of a child upon whom Guyon performed a nephrotomy six months before, and whose general and local conditions showed such remarkable improvement that a permanent cure is looked for.

He considers nephrotomy indicated when the patient is suffering, is losing ground, and when both kidneys are affected.

The success of the operation depends upon the manner of its performance. It is essential to open freely *all* pus cavities, and to remove, so far as possible, all cheesy masses; to drain freely; and to suture the edges of the renal wound to the lumbar incision, so as to allow the interior of the kidney to be easily cleansed and dressed. If these steps are not taken, the operation is useless.

The following figures are given in regard to nephrectomies:

(1) ABDOMINAL.

Tuffier	.	.	.	.	.	11 cases,	mortality, 26.3%
Facklam	.	.	.	.	.	13 "	" 30.0%
Vigneron	.	.	.	.	.	19 "	" 26.84%

(2) LUMBAR.

Tuffier	45 cases,	mortality, 28.2%
Facklam	75 "	" 28%
Vigneron (primary)	65 "	" 40%
Vigneron (secondary)	20 "	" 35%

Vigneron accounts for the higher rate of mortality in the series of cases which he has collected by the fact that it includes a larger number of cases operated on in the earlier days of nephrectomy, when the technique of the operation was less perfect.

The author urges secondary nephrectomy rather than primary, and considers that if it is so done the mortality is much less than with primary nephrectomy. The best time to choose is a few weeks after a nephrotomy, as soon as the general condition of the patient has improved.

Nephrectomy should be considered only in those cases in which the disease is unilateral. Vigneron considers that renal palpation and the endoscope will, in most cases, make a decision in this respect perfectly possible.

Nephrectomy should not, of course, be undertaken unless there is satisfactory evidence that the other kidney is not involved, which is not always an easy matter to determine. It is impossible to lay down any general rule that shall be applicable to all cases, that is to say, it cannot be asserted that nephrectomy should always be done in preference to nephrotomy, or *vice versa*. The rational plan would seem to be to make an exploratory nephrotomy, and to act according to the conditions found; for example, if the disease should be confined to a well-defined area of the kidney, not too extensive, a resection of that portion of the organ may be the best thing to be done, as recommended and practised by Czerny, Kummel, Bryson, and others. The patient's strength and the usual considerations that

govern the surgeon in deciding whether it is safe to proceed to a grave operation after an exploratory one, will determine his course. It is thought by many surgeons that it is much safer to do a secondary nephrectomy in all cases; and the records of that operation so performed seem to point to that conclusion.

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